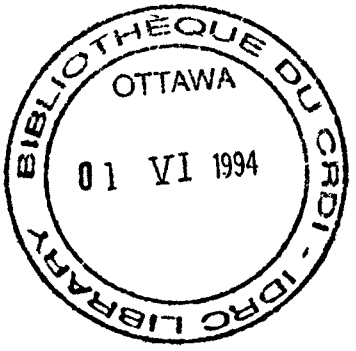
KOREA FOLLOW-UP STUDY

An examination of four projects supported by the Science, Technology and Energy Policy Unit of IDRC

John D. M. Hardie
May 1984



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Introduction

1. Much of the Centre's information about the activities it has supported concerns events during and immediately upon completion of projects. There is relatively little knowledge about subsequent events in the years following the termination of IDRC involvement and support. Yet such knowledge is central to an awareness of the extent to which the Centre is fulfilling its mandate. Its attempts to do this are based on the concept that relatively intensive interaction with, and modest financial support to researchers to work in their own environment can have a lasting effect on indigenous research capacity and contribute to the stock of useful knowledge in a country. Hence the basic questions of: What has happened to the researchers? What has happened to the results? What has become of the institution? have preoccupied the Office of Planning and Evaluation since its inception. This curiosity coincided with a desire on the part of the Science and Technology Policy program in the Social Sciences Division to take stock of its activities through a program review, containing an evaluation component. It was therefore agreed to follow-up on four Science and Technology Policy supported projects in Korea which had ended three to five years previously.

2. The four projects were:-

I	Science and Technology Policy Instruments	1973-78	$68,000
II	Absorption and Diffusion of Imported Technology	1977-81	$73,000
III	Biogas Technology : Social and Economic Evaluation	1978-79	$10,000
IV	Regional Adaptive Technology Centres	1976-80	$66,000

The methodology involved discussion with program staff, review of file material, and a brief visit to Korea by a member of the Office of Planning and Evaluation to interview past project leaders and other team members, as available.

3. The results of this modest investigation are reported in the following pages, treating each project separately under three main headings:

INTRODUCTION - giving the original objectives and a synopsis of the relevant background;

PEOPLE - information on the key individuals who carried out the activity and on what they are doing now;

RESULTS - information on the output from the projects, whether the results were published, and the extent to which the knowledge gained was used.

4. The exercise was discussed with the staff of the Science, Technology and Energy Policy Program and other members of the Social Sciences Division in May, 1984. The main issues and conclusions are summarized below.

Issues

5. The overwhelming impression gained from the study is one of vindication of IDRC's **modus operandi.** Compared to other ways of enhancing research and scientific capability - one of the Centre's principal corporate objectives - IDRC's approach is often characterized by:

   (a) small amounts of financial support;

   (b) a high degree of interaction between the people involved and the program staff, mainly aimed at facilitating **indigenous** definition of problems and research topics, and exchange of information and experience with people from other countries (two of the four projects were part of large network projects);

   (c) relatively little "overseeing" from the Centre, with a high degree of freedom for the researchers to find their own way.

The important features of this case study are that for a total of $217,000 financial support, about 30 persons were provided with an opportunity to become involved with science and technology policy research related to their own environment and to meet, establish relationships with and learn from their fellow countrymen. Engineers worked with economists, professors with entrepreneurs, government employees with academics. Most important, most of these individuals are still living and working in Korea, some in more senior positions, and one or two in positions capable of exerting considerable influence on scientific and technological development. To say this is far from claiming cause and effect, but a contribution to self-development and some "virtue by association".

6. The benefits amount to something that is not adequately captured by the often used phrase "enhanced research capacity." There were contributions to teaching; to the awareness of policy-makers; to the decisions made by people in charge of significant public corporations and private industry, to communication based on mutual respect among people with different skills being used in different ways to derive social and economic benefits from the application of science and technology. Having examined the activities from a national and local perspective, it is these locally specific outcomes that justify the efforts of the researchers, more than the more elaborately stated network or national objectives. The specific results of the research activities themselves were less important than the subsequent use which the people involved have made of their own enhanced knowledge and individual abilities as a result of conducting the research.

7. Although specific information was not collected, the division views this set of projects as a good illustration of the three characteristics of IDRC's approach outlined earlier. In particular, in terms of the way the Centre employed all the resources available to it, a considerable amount of professional staff time was spent, especially during the project development stage. Intense interaction with the people to be involved took place through travelling to the countries to establish the networks, organization of workshops, in-country team meetings. These "setting-up costs" are considered to be a necessary condition to achieving the kinds of benefits discussed above. Certainly it is apparent that once this investment in time had been made, relatively small amounts of direct financial support generated a considerable amount of activity. However, an important question emerges which would require further research to resolve. It relates to the relative allocation of "setting-up costs" (mostly in terms of staff time) between establishing the networks and developing national projects; and to the relative allocation of the

corresponding benefits arising from the network activities per se and the national efforts. This observer would propose the hypothesis that most of the benefits were derived from the nationally specific efforts in the Korean case and were only weakly dependent on the networks; and that therefore the benefit:cost ratio for the investment in setting-up national activities was much higher than for the network.

8. There remains also a strong impression of "unfinished business" : that many of the people would welcome the further opportunity that some financial support would provide to develop their ideas. This issue is difficult to treat separately from the question of the extent to which the Centre should continue to provide support to a country with Korea's level of wealth and research capacity. But the general question can still be raised : how often does the Centre move on to the next institution in another country, when some form of additional assistance would consolidate previous endeavours, either with respect to building research capacity or to the useful application of the products of that capacity? In cases where the setting-up costs have been high, a better return on this investment can be obtained by providing further support; i.e. a phase II or III can take less staff time than a phase I.

9. In three of the projects, the publications of importance were produced locally in the Korean language : a textbook on the management of technology used for university teaching; a booklet on biogas production; extension materials for small-medium cast iron industry. These were produced on individual initiative, mostly without intended Centre support. This can be taken as an example of the leverage that is often exerted by IDRC funding and of maximum scope given to local initiative. Again however, general questions arise : given the importance of indigenous capacity and locally specific knowledge, language and immediate dissemination become paramount. Are there occasions when there are no

institutional resources for production of even (say) 100 photocopies of a typescript in the appropriate language for the community, and when the Centre has aimed too high, at international distribution of a higher quality product? There are many countries in which the most basic resources - paper, typewriters, photocopiers - are simply not available. The question of "quality" may merit a closer examination. Clearly any publication intended for international distribution under the Centre imprimatur should be of a certain standard, but for specific country needs, the output of a given project, while not of "international" standards, may be the only work in existence on that topic for that country. As such, it merits at least local dissemination, if for no other reason that to begin the process of quality improvement through peer review and criticism.

I SCIENCE AND TECHNOLOGY POLICY INSTRUMENTS : KOREA (1973-1978) ($68,000)

INTRODUCTION

1. The original project summary was entitled "Technology Policy Instruments (3-73-018, 21 May 1973) and proposed the establishment of a network of nine countries, of which South Korea was one. A subsequent project (entitled "Science and Technology Policy Instruments") added another two countries, one of which did not participate, and the final list became Argentina, Brazil, Colombia, Peru, Mexico, Venezuela, Egypt, Macedonia, India, South Korea.

2. The network was 2½ years in the making and was a unique experiment, drawing together countries with very diverse socio-economic systems and culture, but united by a common objective of:

> **trying to make science and technology a more effective tool in development, (3-73-018, p.3).**

In each country, the project was supported by policy makers and in most countries it had been discussed at the ministerial level.

3. The main advantage of the network was seen as the exchange of knowledge between the developing country national teams, with the aim of improving national policy-making. International comparative study and synthesis was seen as a secondary objective.

4. A workshop in Barbados in early 1973 brought together science and technology policy makers and researchers from the ten countries. They formulated the following research objectives:

"The general purpose of the project is to gather, analyse, evaluate and generate information which would help policy-makers, planners and decision-makers in developing countries to specify the ways and means for orienting science and technology toward the achievement of development objectives. In particular, the project should help to:

- develop indigenous capabilities in science and technology appropriate to the countries' needs;
- better utilize these capabilities in the productive sector and other areas of socio-economic activity;
- improve the process of importing technology in such a way as to maximize its beneficial effects and minimize its detrimental effects;
- absorb and adopt the imported technology linking it to the indigenous scientific and technical activities."

5. In each country, the project was to be conducted in four phases.

Phase 1 : a general diagnosis of the state of science and technology in the country, to provide background information against which to assess the relative effectiveness of different instruments of policy implementation.

Phase 2 : an examination of the role of government in the formulation and implementation of science and technology policies. Both explicit science and technology policies, and the implications for science and technology inherent in other (= implicit) policies were to be considered.

Phase 3 : empirical case studies, based on productive units, to test the effectiveness of alternative mechanisms and instruments for implementing science and technology policies.

Phase 4 : empirical studies of the effect that mechanisms and instruments for implementing science and technology policies have on the behaviour of agencies that produce scientific and technological knowledge.

These are the bones of the methodological guidelines provided by the field co-ordinator's office, but each country team was encouraged to pursue the research in a way that ensured maximum interaction with policy-makers in their own country. Thus international comparability was traded in favour of national applicability and impact.

6. The South Korean team was based with the Korean Advanced Institute of Science. This choice was made by the Minister of Science and Technology, Mr. Choi, following discussions with IDRC. The Korean team was strong and contained mostly professionally trained engineers. The team followed the methodological guidelines more closely than any of the other countries and the quality of the work was consistently high. The co-ordinator of the Korean group was Dr. KunMo Chung, a personal friend of the Minister of Economic Planning, and Director of the Science, Technology and Society programme of the Korean Advanced Institute of Science. Thus, as reported briefly in the project completion report, the impact on policy-making was considerable, since Dr. KunMo Chung and the Minister held frequent meetings to discuss project activities and ideas, and on several occasions the products of the discussions found their way into statements of Korean government policy.

PEOPLE

7. Dr. KunMo Chung became Vice-President of the renamed Korean Advanced Institute of Science and Technology, a key research and educational agency. Between 1970 and 1981, it trained 1488 scientists and engineers, and plans an expansion of its PhD and Master's programs between 1982 and 1986 to 550 and 2790 graduates respectively.

He provided the retrospective view of the project and information about subsequent events.

He himself was introduced to engineering during the project and has become President of the Korean Power Engineering Company, Inc. It was established in 1976 to foster the country's self reliance in power plant engineering, particularly in nuclear power plant technology. It employs 700 engineers and specialists and is a very powerful factor in Korea's economic development. The company has grown rapidly in recent years and is currently engaged in a ten year project to produce a standardised reactor design for Korea. Dr. Chung is one of a small group of the most senior scientific and policy advisors to the President of the country, and relishes the opportunity to put the project ideas and experience into practice.

Dr. Dok Yoon was a specialist in high pressure physics when he joined the project team. During case study work in the project, he switched interest and allegiance to powder metallurgy as being more relevant to Korean development. He is now the leading scientist in this field in Korea and is Professor of Material Science at the Korean Advanced Institute of Science and Technology. He is recognized as one of the three best scientists in the world in powder metallurgy. He is keenly interested in science policy and is Secretary General of the Korean Science Foundation.

Dr. Kim joined the team as an economic consultant with a PhD from Stamford University. The project experience provided him with a science and technology basis for his work. He is now Chief Secretary on Economic Affairs to the President of Korea.

Mr. Song was a full time research assistant on the team as a chemical engineer. He was in fact the only full time person. He subsequently became Chief of Planning for the Korean Standards Research Institute, and developed considerable expertise in the running of a scientific institution. He now works with Dr. Kim as Secretary to the President on Scientific Affairs. [Dr. KunMo Chung considers his development to be a real product of the project].

Dr. Shin was a research associate with the project and is now Professor of Statistics at Korea University.

Dr. Lee of the Korean Development Institute is now a specialist with the World Bank.

Mr. Cho was a section chief at the Ministry of Science and Technology and is now Assistant Secretary of that Ministry.

Dr. Suh of Korea Univesity is now Minister of Energy and Resources. He was loosely associated with the team.

RESULTS

8. In retrospect, Dr. KunMo Chung feels that the direct impact on policy of the team's work did not meet the hopes that lay behind the chosen emphasis on "action-oriented" work. Policy research is a peculiar animal with perhaps the greatest usefulness lying in giving opportunities to unproven people and broadening their outlook : the engineers began to understand the contextual social

and economic implications of technology; and the "soft" scientists derived a great appreciation of technicalities. To a certain extent it is unrealistic to expect direct policy impact, but the indirect effects of self-reliance and self-improvement can be considerable. Dr. Chung would rather describe the project as a self-teaching experience than as research.

9. Dr. Chung's serious illness and local political factors constrained dissemination efforts. The Ministry of Science and Technology did not place great value on the project : most support came from the Economic Planning Board. In the Korean context, science and technology policy people have to be attached to the Economic Planning group, not the Ministry of Science and Tecnnology.

10. As a specific example of effect, the government policy group deliberating on telecommunications technology for the country used the project team as a sounding board for the proposal to adopt an electronic switching system. Subsequently this system was adopted.

II ABSORPTION AND DIFFUSION OF IMPORTED TECHNOLOGY (1977-81) ($73,000)

INTRODUCTION

1. This project was one component of a network designed to analyse the absorption and diffusion of imported technology in seven Asian countries. The Centre had two general objectives : first, the training objective, to encourage and support researchers to understand a complex economic area; second, the research objective, to allow the researchers to establish some preliminary results. The research objectives were stated as follows:

"(i) to examine the pattern of technology transfer and adaptation at the firm level in various industrial sectors;

(ii) to explore the way that imported technology changes (both for the sector and the enterprise) manufacturing, training and commercial perspectives;

(iii) propose policy changes which allow technology absorption and adaptation to cohere more appropriately to national goals."

These objectives were considered to be ambitious, and the training component was felt to be the most important.

PEOPLE

Project Leader

Dr. Woo Hee Park, Professor of Economics, College of Social Sciences, Seoul National University.

Dr. Moo Ki Bai, Associate Professor of Economics, Seoul National University.

Dr. Suck Chul Yoon, Professor of Management Science, School of Management, Seoul National University.

2. All three of the above are still with Seoul National University. Dr. Park was ill during the visit and brief interviews were conducted with Drs. Bai and Yoon. It was not possible to obtain information on the other five of the eight persons in the group.

RESULTS

3. The co-ordinating consultant, Dr. Enos, and the project leader Dr. Park, are working on writing and revising a report for publication.

4. Dr. Park and Dr. Yoon contributed papers to a workshop in Singapore in 1981 (IDRC - 171e).

5. Dr. Bai worked on the nylon textile case study with a fellow professor of engineering, Dr. Kim, who had good contacts with the company through lecturing and consultancy work. They made visits and used a tape recorder extensively to gather information. Dr. Bai found that he (the economist) and Dr. Kim (engineer) complemented each other well and the study results were very revealing to them.

He found the experience gave direction to the extension of his research activities, as it did for the other researchers, e.g. Dr. Yoon (see below); and Dr. Park published a book in Japanese using some of the project results. Dr. Bai presented the findings of his case study to a United Nations University Conference in 1980.

5. Dr. Yoon makes extensive use of the project results in his teaching. He has designed a new course in Technology Economics and uses teachers from different colleges. He has written a book "Technology Accumulation and it's Management", using many ideas from the project. It has been published in Korean and is used in class work. The private sector and the government recognize him as a source of specialist knowledge and he is called upon by both for advisory work, formal lecturing, and seminars on technology. The Ministry of Science and Technology and the Economic Planning Board use his services. He intends to broaden the scope of the book to include consideration of management skills, and to publish it in English.

6. The results of each of the four case studies were also published in the Quarterly Journal of the Economics Research Institute, which receives wide circulation to universities.

7. Both Drs. Yoon and Bai emphasized the value of indirect effects through self-development, into teaching and other research, as opposed to direct impacts of the research results per se. Dr. Yoon considers that the publication of his book locally was essential to impart the information to government and industry that a source of expertise in this area existed.

8. The Science Policy Research Unit Workshop in Sussex was important to both Drs. Bai and Yoon in opening up the subject to them and providing a lot of information and material. There was a sense that the course was too directive for an infant "discipline".

9. The project was originally funded as part of a network, with similar work conducted in the Philippines, Pakistan, Sri Lanka, India, Bangladesh. Dr. Yoon assessed the performance of all but Korea and India as disappointing. The rate of progress was highly variable among the teams - a reflection of the too heterogeneous mix of team compositions. For example, Korea was represented at the professional level, whereas other countries had lower level government officials or people from profit making research institutes with different attitudes and levels of academic achievement.

III BIOGAS TECHNOLOGY : SOCIAL AND ECONOMIC EVALUATION (1978-79) ($10,000)

INTRODUCTION

1. This project was preceded by a "state of the art" review of the field of biogas technology (3-A-76-4099), followed by a project identification meeting in Colombo, Sri Lanka on "The Social and Economic evaluation of Biogas Technology," (3-A-76-4158). Following this meeting, seven institutions in five Asian countries submitted projects. It was subsequently decided to initiate a network of projects stressing the development of research capability in Asian institutions in the area of the social and economic aspects of technology theories at the village level. Hence the project objectives were stated as being twofold:

   "Firstly, to enable participants to develop a research capability in providing the technical R&D process with an understanding of the social and economic characteristics of the rural environment in which a particular technical innovation is to take place. This capability will stress the appraisal of technical options on the basis of their likely social and economic effects in different environments.

   Secondly, to develop and apply a methodology which will provide information and analysis of the social and economic value of installed biogas plants and on the energy characteristics of selected rural areas in which the further application of biogas technology might be considered."

PEOPLE

Project Leader

Dr. Jae Won Chung , Office of Rural Development, Suweon.
Dr. Young Dae Park , Head of Rural Energy Resource Research Division, Office of Rural Development.

2. Dr. Chung was not available, but Dr. Park substituted for him. He was able to give some summary information about the people involved in the project.

   Dr. Chung is now in the "private sector" (see below).

   Dr. Park is now head of the Agricultural Chemistry Division, which is carrying on the biogas work of the now defunct Rural Energy Resource Research Division.

   Dr. Hong is a profesor of sociology at Hanyung University. He was a senior research worker in the project.

   Dr. Pan is a professor of economics.

   Dr. Han is at the Farm Machinery Institute.

   Dr. Lee is Professor of Economics at Seoul University.

3. This very sketchy information can only be amplified by some more detail on Dr. Chung, relayed by Dr. Park.

Dr. In Hwon Kim who, as Director General of the Office of Rural Development, was the official recipient for this small project, was a keen proponent of biogas.

Between 1969 and 1975, the Korean Government, through the system of provincial Rural Guidance Bureaus, implemented a subsidised program of installation of 28,000 small biogas units in rural Korea. For various reasons, among which was a switch to propane, kerosene and briquettes as rural incomes rose, acceptance of the biogas units was poor, and diminished over time. The Rural Energy Resource Research Division investigated the acceptance problems through Dr. Park. Subsequently, Dr. Kim attempted to design a larger community digestor unit suitable for village production and winter supply of biogas. In 1979, such a unit was costed at US $27,000, using solar panels. It was proposed to the government in 1980.

Political events following the assassination of President Park led to the removal of Dr. Kim from his position and the closure of the Rural Energy Resource Research Division. The new administration viewed the village level unit as too costly. Attempts are now being made to develop a cheaper smaller unit again, more suitable for use by the Korean farmer. A prototype using compost under a plastic sheet has been produced. It has received coverage by the Korean Broadcasting Service and President Chun is reportedly enthusiastic. About 900 units have been disseminated at an average unit cost of US $250.

It appears as though the same forces that removed Dr. Kim from his position also impinged upon Dr. Chung, the project leader. His departure from the Office of Rural Development occurred at the same time as Dr. Kim's.

RESULTS

3. Dr. Chung produced a final report in 1979, entitled "Biogas in Korea". This was also published in Korean in booklet form out of project savings. The number of copies made is uncertain (perhaps 100?), and circulation seems to have been confined to libraries.

4. Dr. Park is keen to have the results of his work published by IDRC.

5. It is Dr. Park who has been leading the subsequent work on the new digestor. He presented the results of his work at a conference* on agricultural waste management technology in 1982. The project looked at household energy needs in Korea and helped to identify what was wrong with the previous small digestor technology. This led to the new compost digestor. Dr. Park has been supported by the United Nations as a technical advisor to Turkey, and by the German Agency for Technical Cooperation (GTZ) to attend an international workshop. Other Asian countries and agencies such as the International Rice Research Institute have also shown great interest.

6. His view on the small amount of money provided by IDRC was that money is the key to unlock the time constraint. If he has funds, he makes time to do research.

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*"Technology Utilization and Management of Agricultural Wastes" (1982)
Ed. S.A. Salam Abang Abdullah Abang Ali
Regional Seminar, University Pertanian, Malaysia, 15-17 September 1982.

IV REGIONAL ADAPTIVE TECHNOLOGY CENTRES (1976-80) ($66,000)

INTRODUCTION

1. The concept of the Regional Adaptive Technology Centre was developed in a number of Asian countries in the 1970's as a way of harnessing the capabilities of non-metropolitan universities to encourage technical change in local production sectors. The Centres were seen as specific frameworks within the universities that would cut across disciplinary boundaries and co-ordinate a complex of necessary activities including research, technical development, policy formulation, and extension to industry.

2. Yeungnam University in South Korea was one of three universities to have formally established a Centre within its organizational structure. The University conducted a feasibility study to identify the production sectors on which to focus its efforts, to outline the methods for dealing with the problems, and to make a preliminary assessment of the practicality and utility of implementing a program for changing technology. The Regional Adaptive Technology Centre at Yeungnam developed a three year program, split into two eighteen month phases. The first phase was presented to IDRC as a project. The Technology Centre chose two sectors of manufacturing activity : the production of quartz crystal resonators; and small and medium scale iron and steel casting.

3. The objectives of the project were:

   - to identify problems that necessitated changing the existing technology;

- to identify constraints to technical change posed by enterprise management or national/regional policy;

- to specify a set of actions for promoting technical change that could be undertaken at various levels from the individual firm up to the national government;

- to define how the regional Adaptive Technology Centre component of a technical change program could be implemented;

- to estimate what benefits could arise from the changes.

PEOPLE

Name	During Project (1976-79)	1983
Ki Ho Chung (Project Leader)	Director of Regional Adaptive Technology Centre, Yeungman University.	Professor of Electronics and Dean of Engineering College, Yeungnam U.
Gyong-Chan Kim	Professor of Civil Engineering, Yeungnam University.	Director of the International Division of Yeungman University.
Quartz Crystal resonator subproject		
Mu Young Lee	Professor of Elecronics, Yeungnam University	(same position)
In Hyon Woo	President of Korea Crystal Company Limited	(same position)

Iron and Steel casting subproject

Ki Sul Lee	Professor of Mechanical Engineering, Yeungnam University.	(same position)
Rak Won Kang	Professor in Department of Casting Industry, Yeungnam University.	(same position)

Management and policy subproject

Jong-Sup Kim	Professor, Department of Public Administration, Yeungnam University	(same position)
Byung-Tae Yun	(ditto)	Director of a provincial project of the Regional Adaptive Technology Centre.
Sung-Kyu Park	(ditto)	Dean of Finance of Yeungnam University
Won-Dal Lee	Professor, Department of Economics, Yeungnam University	Same position, on one year study leave in U.S.A.

4. The project leader, Professor Ki Ho Chung, provided the above summary of the subsequent careers of the key people involved in the project. In fact, there is very little change, e.g. all staff are still with the University and most are in the same positions. Professor Ki Ho Chung is no longer Director of the Regional Adaptive Technology Centre, which does not now have the office which it had during the project and which appears to exist in name

only and in a loose network of contacts within the University. Professor Mu Young Lee worked with three quartz crystal firms during the project and now has contacts with about twenty in the area. Three of these are very large and the remainder are small. Recent technological shifts and structural changes in the industry have caused the disappearance of some firms in the region that were originally established on the strength of a virtually free supply of raw materials from the military surplus of the Korean war. Professor Lee mostly employs his project experience in his post-graduate teaching. He has only limited testing facilities in his offices at the university. The extent of his field work appears to be limited by this fact and by his teaching load.

5. Professor Ki-Sul Lee is still quite actively employed with extension work with 20 to 25 iron and steel foundries in the region. During the project, Professor Lee worked mainly with two firms with 80 to 100 employees. One of them - the Dae Han Cast Iron Co. Ltd. - now employs 300 people and has expanded operations to two sites. Output has risen from 200 to 1000 tonnes per month, with a much wider range of items. Relations between this firm and the university, personified by Professor Lee, are clearly extremely good and mutually beneficial. During the project Professor Lee carried out a series of basic extension exercises, e.g. with management and staff, he assembled all reject castings for a given period and discussed the possible causes. As a result the reject rate was reduced from 7.8 percent to 2.3 percent. Another problem arose with the use of indigenous anthracite in the smelting process. The combustion characteristics of this material were found to be poor and could be improved by mixing with coke.

RESULTS

6. It is clear that the results in terms of generalizable policies or actions for promoting technological changes have been of less significance than the case-specific relationships and mutual benefits to university staff and local industry that the project facilitated. Very little formal publishing seems to have arisen from the quartz crystal subproject. A local Small-Medium Industry Promotion Association has provided some small grants to support further work with the foundry industry. Professor Ki-Sul Lee has had some small problem-solving contracts with local firms. He submits the findings of these to the Associaton which then distributes them to other firms in the area.

7. Although the legacy of project activities is still evident, there remain questions about the effective existence of the Regional Adaptive Technology Centre. It certainly no longer has a physical location in the university. The point was made about the leverage that IDRC exerted : because of the Centre's funding and reputation, other agencies were willing to provide funds for research activities. The question remains whether IDRC stayed long enough to ensure that sufficient momentum had been generated.